What Is Claimed Is:

1. A method for loading a solute into a cell comprising:

disposing a cell in a solution having a solute concentration of sufficient magnitude to produce hyperosmotic pressure on the cell for transferring a solute from the solution into the cell.

2. The method of Claim 1 wherein said solute concentration includes an extracellular cellular solute concentration for elevating extracelluar osmolarity within the solution to a value which is greater than a value of the intracellular osmolarity of the cell.

3. The method of Claim 1 wherein said transferring a solute is by fluid phase endocytosis.

4. The method of Claim 1 wherein said solute comprises trehalose and said cell comprises an erythrocytic cell.

5. The method of Claim 4 wherein said transferring of trehalose from the solution into the erythrocytic cell is without degradation of the trehalose.

6. The method of Claim 4 wherein a gradient of trehalose concentration (mM) within the erythrocytic cell to extracellular trehalose concentration (mM) within the solution ranges from about 0.130 to about 0.200.

7. The method of Claim 4 wherein a gradient of trehalose concentration (mM) within the erythrocytic cell to extracellular trehalose concentration (mM) within the solution ranges from about 0.04 to about 0.12.

8. The method of Claim 4 wherein a gradient of trehalose concentration (mM) within the erythrocytic cell to extracellular trehalose concentration (mM) within the solution ranges from about 0.08 to about 0.12.

9. The method of Claim 4 wherein said solute solution has a trehalose concentration ranging from about 320 mM to about 4000 mM.

10. The method of Claim 4 wherein said solute solution has a trehalose concentration ranging from about 320 mM to about 2000 mM.

11. The method of Claim 4 wherein said solute solution has a trehalose concentration ranging from about 500 mM to about 1000 mM.

12. A cell produced in accordance with the method of Claim 1.

13. An erythrocytic cell produced in accordance with the method of Claim 11.

14. A method for loading trehalose into an erythrocytic cell comprising disposing an erythrocytic cell in a trehalose solution having a trehalose concentration of at least about 25 % greater than the intracellular osmolarity of the erythrocytic cell for loading the trehalose into the erythrocytic cell.

15. The method of Claim 14 wherein said loading the trehalose into the erythrocytic cell is by fluid phase endocytosis.

16. The method of Claim 14 wherein said loading of the trehalose from the trehalose solution into the erythrocytic cell is without degradation of the trehalose.

17. The method of Claim 14 said loading of the trehalose produces a loaded erythrocytic cell having a gradient of loaded trehalose concentration(mM) within the erythrocytic cell to extracellular trehalose concentration (mM) within the trehalose solution ranging from about 0.130 to about 0.200.

18. The method of Claim 14 wherein said loading of the trehalose produces a loaded erythrocytic cell having a gradient of loaded trehalose concentration (mM) within the erythrocytic cell to extracellular trehalose concentration (mM) within the trehalose solution ranging from about 0.04 to about 0.08.

19. The method of Claim 14 wherein said loading of the trehalose produces a loaded erythrocytic cell having a gradient of loaded trehalose concentration (mM) within the erythrocytic cell to extracellular trehalose concentration (mM) within the trehalose solution ranging from about 0.04 to about 0.12.

20. The method of Claim 14 wherein said trehalose solution has a trehalose concentration of at least about 50% greater than the intracellular osmolarity of the erythrocytic cell.

21. The method of Claim 14 wherein said trehalose solution has a trehalose concentration ranging from about 25 % to at least

about 1000% greater than the intracellular osmolarity of the erythrocytic cell.

22. An erythrocytic cell produced in accordance with the method of Claim 14.

23. The method of Claim 1 additionally comprising

preventing a decrease in a loading efficiency gradient in the loading of the solute into the cell.

24. The method of Claim 23 wherein said solute comprises an oligosaccharide and said preventing a decrease in a loading efficiency gradient in the loading of the oligosaccharide into the cell comprises maintaining a concentration of the oligosaccharide in the oligosaccharide solution below a concentration ranging from about 35 mM to about 65 mM.

25. The method of Claim 23 wherein said loading comprises loading by fluid phase endocytosis.

26. The method of Claim 24 wherein said loading comprises loading by fluid phase endocytosis.

27. The method of Claim 23 wherein said solute comprises an oligosaccharide and said preventing a decrease in a loading efficiency gradient in the loading of the oligosaccharide into the cell comprises maintaining a positive gradient of loading efficiency to concentration of the oligosaccharide in the oligosaccharide solution.

28. The method of Claim 23 wherein said solute comprises an oligosaccharide and said preventing a decrease in a loading efficiency gradient in the loading of the oligosaccharide into the cell comprises maintaining a positive gradient of loading efficiency (%) to concentration (mM) of the oligosaccharide in the oligosaccharide solution.

29. The method of Claim 27 wherein said oligosaccharide comprises trehalose.

30. The method of Claim 28 wherein said oligosaccharide comprises trehalose.

31. A method for loading trehalose into cells comprising:

disposing cells in a trehalose solution having a trehalose concentration of at least about 25 % greater than the intracellular osmolarity of the cells for loading trehalose into the cells; and

preventing a decrease in a loading efficiency gradient in the loading of the trehalose into the cells.

32. The method of Claim 31 wherein said preventing a decrease in a loading efficiency gradient in the loading of the trehalose into the cells comprises maintaining a concentration of the trehalose in the trehalose solution below a concentration ranging from about 35 mM to about 65 mM.

33. The method of Claim 31 wherein said loading comprises loading by fluid phase endocytosis.

34. The method of Claim 32 wherein said loading comprises loading by fluid phase endocytosis.

35. The method of Claim 31 wherein said preventing a decrease in a loading efficiency gradient in the loading of the trehalose into the cells comprises maintaining a positive gradient of loading efficiency to concentration of the trehalose in the trehalose solution.

36. The method of Claim 31 wherein said preventing a decrease in a loading efficiency gradient in the loading of the trehalose into the cells comprises maintaining a positive gradient of loading efficiency (%) to concentration (mM) of the trehalose in the trehalose solution.

37. The method of Claim 31 wherein said cells comprise erythrocytic cells.

38. The method of Claim 36 wherein said cells comprise erythrocytic cells.

39. A method for loading an oligosaccharide into cells comprising:

disposing cells in an oligosaccharide solution having an oligosaccharide concentration of at least about 25 % greater than the intracellular osmolarity of the cells for loading oligosaccharide into the cells; and

preventing a decrease in a loading gradient in the loading of the oligosaccharide into the cells.

40. The method of Claim 39 wherein said preventing a decrease in a loading gradient in the loading of the oligosaccharide into the cells comprises maintaining a concentration of the oligosaccharide in the oligosaccharide solution below a concentration ranging from about 35 mM to about 65 mM.

41. The method of Claim 39 wherein said loading comprises loading by fluid phase endocytosis.

42. The method of Claim 40 wherein said loading comprises loading by fluid phase endocytosis.

43. The method of Claim 39 wherein said preventing a decrease in a loading gradient in the loading of the oligosaccharide into the cells comprises maintaining a positive gradient of concentration of oligosaccharide loaded into the cells to concentration of the oligosaccharide in the oligosaccharide solution.

44. The method of Claim 43 wherein said oligosaccharide comprises trehalose.

45. The method of Claim 39 wherein said cells comprise erythrocytic cells.

46. The method of Claim 1 additionally comprising retaining the solute in the cell.

47. The method of Claim 1 additionally comprising washing the cell, and retaining the solute in the cell during the washing.

48. The method of Claim 47 wherein said washing is with a washing buffer, and retention of the solute in the cell increases from about 25% to about 175% when a buffer concentration increases from about 50% to about 400%.

49. The method of Claim 47 wherein said washing is with a washing buffer, and retention of the solute in the cell increases from about 50% to about 150% when a buffer concentration increases from about 100% to about 300%.

50. The method of Claim 47 wherein said washing is with a washing buffer, and retention of the solute in the cell increases from about 75% to about 125% when a buffer concentration increases from about 150% to about 250%.

51. The method of Claim 47 wherein said washing is with a washing buffer, and retention of the solute in the cell increases about 100% when a buffer concentration increases about 200%.

52. The method of Claim 1 additionally comprising washing the cell with a washing buffer wherein a ratio of an extracellular buffer concentration (mOsm) to an intracellular solute concentration (mM) ranges from about 14.0 to about 4.0.

53. The method of Claim 1 additionally comprising washing the cell with a washing buffer wherein a ratio of an extracellular buffer concentration (mOsm) to an intracellular solute concentration (mM) ranges from about 12.0 to about 5.0.

54. The method of Claim 1 additionally comprising washing the cell with a washing buffer wherein a ratio of an extracellular

buffer concentration (mOsm) to an intracellular solute concentration (mM) ranges from about 9.0 to about 6.0.

55. The method of Claim 1 additionally comprising washing the cell with a washing buffer wherein a ratio of an extracellular buffer concentration (mOsm) to an intracellular solute concentration (mM) ranges from about 8.0 to about 7.0.

56. The method of Claim 14 additionally comprising retaining the trehalose in the erythrocytic cell.

57. The method of Claim 14 additionally comprising washing the erythrocytic cell, and retaining the trehalose in the erythrocytic cell during the washing.

58. The method of Claim 57 wherein said washing is with a washing buffer, and retention of the trehalose in the erythrocytic cell increases from about 25% to about 175% when a buffer concentration increases from about 50% to about 400%.

59. The method of Claim 47 wherein said washing is with a washing buffer, and retention of the trehalose in the erythrocytic cell increases from about 50% to about 150% when a buffer concentration increases from about 100% to about 300%.

60. The method of Claim 57 wherein said washing is with a washing buffer, and retention of the trehalose in the erythrocytic cell increases from about 75% to about 125% when a buffer concentration increases from about 150% to about 250%.

61. The method of Claim 57 wherein said washing is with a washing buffer, and retention of the trehalose in the

erythrocytic cell increases about 100% when a buffer concentration increases about 200%.

62. The method of Claim 14 additionally comprising washing the erythrocytic cell with a washing buffer wherein a ratio of an extracellular buffer concentration (mOsm) to an intracellular trehalose concentration (mM) ranges from about 14.0 to about 4.0.

63. The method of Claim 14 additionally comprising washing the erythrocytic cell with a washing buffer wherein a ratio of an extracellular buffer concentration (mOsm) to an intracellular trehalose concentration (mM) ranges from about 12.0 to about 5.0.

64. The method of Claim 14 additionally comprising washing the erythrocytic cell with a washing buffer wherein a ratio of an extracellular buffer concentration (mOsm) to an intracellular trehalose concentration (mM) ranges from about 9.0 to about 6.0.

65. The method of Claim 14 additionally comprising washing the erythrocytic cell with a washing buffer wherein a ratio of an extracellular buffer concentration (mOsm) to an intracellular trehalose concentration (mM) ranges from about 8.0 to about 7.0.

66. A method for retaining a solute in a cell comprising disposing a cell containing a solute in a solution wherein a ratio of an extracellular buffer concentration (mOsm) to an intracellular solute concentration (mM) ranges from about 14.0 to about 4.0.